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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/233,145	01/19/1999	SHUNPEI YAMAZAKI	0756-1915	7892

7590

12/05/2002

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MCLEAN, VA 22102

EXAMINER

DUONG, TAI V

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 12/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/233,145

Applicant(s)

YAMAZAKI ET AL.

Examiner

TAI DUONG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-130 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-130 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 07/897,669.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☒ Interview Summary (PTO-413) Paper No(s) 27
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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The amendment dated 11/04/02 has been entered. The finality of the last Office action is withdrawn in view of the new ground of rejections.

The indicated allowability of claims 1-55 is withdrawn in view of the newly discovered reference(s) to Yamazaki (US 5,514,870). Rejections based on the newly cited reference(s) follow.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the feature “ a diameter of said opening is larger at an uppermost surface of said leveling film than at a lowermost surface thereof”, as recited in claims 7, 57 and 62.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature “ a diameter of said opening is larger at an uppermost surface of said leveling film than at a lowermost surface thereof” of claims 7, 57 and 62 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 7-12, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97, 102, 107, 112, 117, 122 and 127 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There does not appear to be a written description in the specification of the claim limitation “ a diameter of said opening is larger at an uppermost surface of said leveling film than at a lowermost surface thereof” in the application as filed. It is appeared that there is an inconsistency between the cross sectional view Figs. 7(E)-(F), 9(E)-(F) and the plan view Figs. 6, 8(B)-(C). The plan view Figs. 6 and 8(B)-(C) show a rectangular opening, not a circular opening . Since the specification is silent about the openings of the above-mentioned figures, it is unclear whether the plan view figures or the cross sectional view figures are correct.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 13-31, 33-36, 38-41, 43-46, 48-51, 53-56, 58-61, 63-66, 68-71, 73-76, 78-81, 83-86, 88-91, 93-96, 98-101, 103-106, 108-11, 113-116, 118-121, 123-126 and 128-130 are

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rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-156725 of record in view of Yamazaki'879.

In this rejection, the term "rounded" is broadly interpreted by the examiner as "not angular. The only differences between the display device of Fig. 4 of JP'725 and that of the instant claims are the JP'725 is silent about the interlayer insulating film 44 comprising an inorganic material, the semiconductor 43 comprising crystalline silicon, the display device being used as a television, the display being a digital gradation display, the liquid crystal mode, and the would have been obvious to employ particular material for the gate electrode. As apparent from Fig. 4 of JP'725, the edge of the organic leveling film 52 is rounded at the periphery of the second contact hole, and the opening is larger at an uppermost surface of the organic leveling film than at a lower surface thereof. Yamazaki discloses in Fig. 7 (F) an organic insulating film 39 over an interlayer insulating film 37 comprising an inorganic material, crystalline silicon 33, a gate electrode 40 made of silicon or molybdenum, TN, PDLC or ferroelectric liquid crystal layer 4 (col. 8, line 6 - col. 10, line 68; col. 4, lines 30-51). . Thus, it would have been obvious to a person of ordinary skill in the art in view of Yamazaki to employ a gate insulating film comprising an inorganic material for obtaining a gate insulating film with small thickness and good insulating characteristics. Also, it would have been obvious to employ crystalline silicon (polysilicon) in the display device of Fig.4 for obtaining thin film transistors (TFTs) with high mobility, as compared to amorphous silicon. Also, it is well-known to employ active matrix liquid crystal displays (AMLCD) in televisions because of the compactness and low operating voltages

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of AMLCDs, as compared with cathode ray tube type televisions. Also, it would have been obvious to employ silicon gate electrode for simplifying the fabrication process. Also, would have been obvious to employ TN liquid crystal for obtaining a LCD with high contrast and low operating voltage. Also, it would have been obvious to employ digital gradation display for simplifying the circuit structure and obtaining accurate gray scale, as compared to analog gradation display.

Claims 7-12, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97, 102, 107, 112, 117, 122 and 127 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-156725 of record in view of Yamazaki'879.


These claims are similar to claims 1-6, 13-31, 33-36, 38-41, 43-46, 48-51, 53-56, 58-61, 63-66, 68-71, 73-76, 78-81, 83-86, 88-91, 93-96, 98-101, 103-106, 108-11, 113-116, 118-121, 123-126 and 128-130 except for limitation "a diameter of said opening is larger at an uppermost surface of said leveling film than at a lowermost surface thereof". As apparent from Fig. 4 of JP'725, the edge of the organic leveling film 52 is rounded at the periphery of the second contact hole, and the opening is larger at an uppermost surface of the organic leveling film than at a lower surface thereof. These claims would have been obvious for the same reasons set forth in the above 103 rejection of claims 1-6, 13-31, 33-36, 38-41, 43-46, 48-51, 53-56, 58-61, 63-66, 68-71, 73-76, 78-81, 83-86, 88-91, 93-96, 98-101, 103-106, 108-11, 113-116, 118-121, 123-126 and 128-130. In the absence of unexpected results, the change in shape of the opening, e.g. from

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rectangular to circular, has been recognized as an obvious matter of choice. *In re Dailey*, 357 F.2d 669, 149 USPQ47 (CCPA 1966).

Any inquiry concerning this communication should be directed to Tai Duong at telephone number 703 308-4873.

  
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TVD

12/02